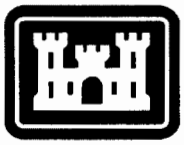

US Army Corps
of Engineers®
New Orleans District

Louisiana Department
of Natural Resources

LOUISIANA COASTAL AREA (LCA), LOUISIANA

ECOSYSTEM RESTORATION

Barataria Basin Barrier Shoreline Ecosystem Restoration

Feasibility Study

Peer Review

2007

1.0 PROJECT DESCRIPTION

1.1 Decision Document

The Barataria Basin Barrier Shoreline Ecosystem Restoration Feasibility Study was identified in the LCA Study as a project that addresses ecosystem restoration for the Barataria Basin Barrier segment of the Louisiana Gulf coast. The feasibility phase of this project is cost shared 50/50 with the project sponsor, the State of Louisiana, with the Louisiana Department of Natural Resources (LDNR) as its representative. Based on the programmatic evaluation in the LCA Study, the Caminada Headland and Shell Island reaches of the Gulf shoreline were identified as critical, near-term restoration efforts that are needed to prevent larger scale, potentially irreversible ecosystem impacts. These two reaches are the only segments of the Barataria Basin Barrier Shoreline that are not addressed by ongoing or recently completed restoration efforts.

1.2 General Site Description

Caminada Headland

Restoration of the Barataria Basin Barrier Shoreline will help sustain significant and unique coastal habitats, protect threatened and endangered species, and provide a sediment source for areas east and west of the headland. Incidental benefits provided by restoration of the Caminada Headland would include added storm surge protection of Port Fourchon, state highways and the only hurricane evacuation route available to the region, Louisiana Highway 1.

The Caminada Headland component of the Barataria Basin Barrier Shoreline Restoration project includes restoration of the shoreline and adjacent interior marshes. Restoration features will be combined into alternative plans that meet the following project objectives:

- Maintain the Caminada Headland which will preserve a critical barrier headland without disrupting the natural hydrologic regime;
- Preserve the integrity of the barrier headland;
- Sustain and improve shoreline, dune and interior marsh habitat quality for essential fish and wildlife species;
- Reduce wave energy transmission that damages interior marsh and chenier ridge habitats north of the Caminada Headland;
- Sustain the extent of interior marsh, chenier ridges, and barrier headland;
- Restore the hydrology of the interior marshes of the Caminada Headland.

Alternative plans that will be developed and evaluated to address these objectives could include restoration of the shoreline by using dredge material to replenish beach face and dune ridge landforms, modifying or removing existing structures, periodic nourishment of restored dune and berm features, placement of terminal stabilization structures, restoration of chenier ridges, and creation of adjacent interior marshes and marsh nourishment with dredged material. Restored landforms could be planted with native vegetation to restore habitat development, quality, and diversity, and reduce erosion. Locations for potential shoreline restoration and interior marsh creation along the Caminada Headland reach of the Barataria Basin Barrier Shoreline are shown on Figure 1.

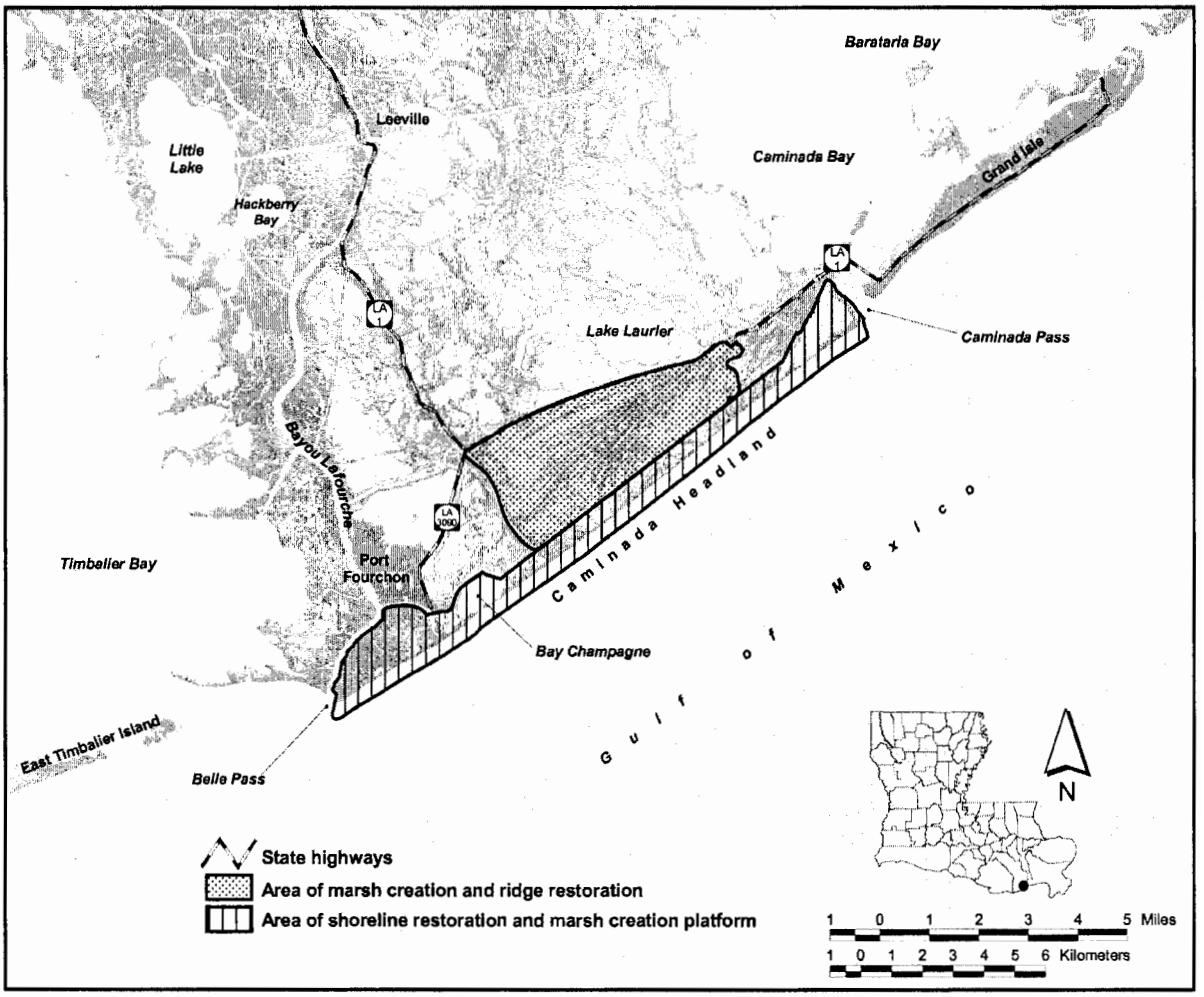

Figure 1. Location of Potential Shoreline Restoration and Interior Marsh Creation for the Caminada Headland

Shell Island

Restoration features for the Shell Island reach of the Barataria Basin Barrier Shoreline will be developed to re-establish a barrier between a threatened estuarine ecosystem and the Gulf of

Mexico by restoring the geomorphic structure and function of this barrier island. Restoring the geomorphic function of Shell Island would promote the re-establishment of long-shore sediment transport along the Gulf shoreline, which, in turn, would support shorelines and critical shoreline habitats west of the Empire Waterway. Restoring the barrier island system along this reach would also reduce the existing marine influence that has encroached into the marsh environment behind the former location of Shell Island. Incidental benefits provided by this ecologic restoration would include increased protection of the nearby Belle Pass navigational channel and oil and gas facilities located along the rim of the inland bays from erosion and storm surges.

The Shell Island component of the Barataria Basin Barrier Shoreline Restoration will be designed to restore the natural sustainability of the barrier shoreline system, while protecting the quality and quantity of habitats along this shoreline reach and adjacent back-barrier marshes. Restoration features will be combined into alternative plans that meet the following project objectives:

- Improve the geomorphic features and function of the barrier shoreline in the vicinity of Shell Island, allowing for the natural processes of overwash and migration over the project life;
- Reestablish the separation of the interior bays from the Gulf of Mexico;
- Enhance shoreline, dune and back-barrier marsh to increase habitat for essential fish and wildlife species both on the barrier island and in the consequently developed quiescent bays;
- Reduce wave energy transmission that damages habitat in the interior bays and marshes north of Shell Island;
- Increase sediment input to supplement long-shore sediment transport processes.

These objectives for restoration of the Shell Island reach will be addressed through development and evaluation of alternative plans that could include dredging and placement of material to restore the shore face, restoration of berm and dune landforms along the east and west reaches of this shoreline segment, placement of dredged material to create back-barrier marshes landward of the restored barrier shorelines, construction of containment features to stabilize marshes, and planting of native vegetation to promote habitat development and decrease erosion. Locations for potential shoreline restoration and interior marsh creation along the Shell Island reach of the Barataria Basin Barrier Shoreline are shown on Figure 2.

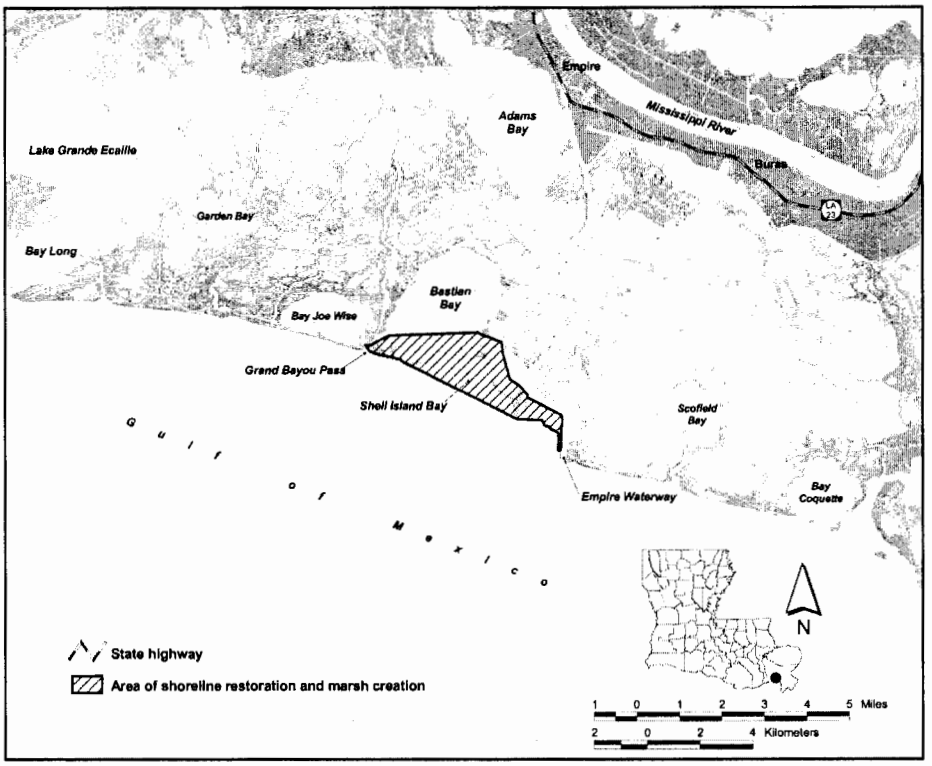

Figure 2. Location of Potential Shoreline Restoration and Back-Barrier Marsh Creation for Shell Island

1.3 STUDY PURPOSE AND SCOPE

1.3.1 Study Purpose

The proposed action to be evaluated in this report is the restoration of the Barataria Basin Barrier Shoreline through shoreline and marsh restoration. The purpose of the proposed action is to restore the geomorphic function of the barrier shoreline of providing ecosystem habitat. In addition, the barrier shoreline also provides some degree of storm surge protection.

Restoration of the shoreline and interior coastal marshes of Caminada Headland and Shell Island would restore critical habitat, form and function, and long-term sustainability of the barrier shoreline. The proposed action would help restore the diversity of coastal habitats (ranging from shorelines, dunes, and ridges to forested swamps, freshwater, intermediate, brackish and saline marshes, freshwater lakes, and bays of variable salinity). These landforms, along with their related hydrologic and biological processes, provide unique habitats that are crucial to the viability of migratory birds (providing breeding, wintering, and stopover habitat), commercial and recreational fisheries (the broad estuaries bordering the Gulf contribute nearly 20% of the volume of U.S. fisheries), and a great variety of terrestrial and aquatic species.

1.3.2 Study Scope

This report is an Integrated Feasibility Report and EIS. The scope of the decision document is the evaluation of the restoration of the Caminada Headland and Shell Island reaches within the Barataria Basin Barrier Shoreline. Coastal restoration efforts for the other reaches in the Barataria Basin Barrier Shoreline are being addressed through other programs, such as Coastal Wetland Planning, Protection, and Restoration Act (CWPPRA).

The study considers all reasonable alternatives including:

- Alternatives considered under previously initiated studies for restoration of the Caminada Headland and Shell Island reaches (prompted by, and including, the LCA Report 2004).
- Alternative borrow sources to be used in dune and marsh construction, including offshore, nearshore, riverine, and other sources.
- Alternatives of varying widths and configurations of barrier shorelines as well as varying heights of restored dunes.
- Consideration of marsh restoration as a platform for barrier shoreline rollover.
- Recommendations from interested parties submitted during scoping and public meetings, and meetings with stakeholders.

1.4 Problem and Opportunities

The Barataria Basin barrier system separates the Gulf of Mexico from the back-barrier estuarine and freshwater wetland environment helping to maintain the salinity gradients important to estuarine and freshwater wetland species. As islands erode and are breached, marine forces are allowed to affect the interior boundaries of the estuaries, thereby accelerating land loss and switching from freshwater and brackish habitats to more saline conditions. In addition, barrier islands serve as valuable storm buffers protecting communities, industry, and associated infrastructure from storm surges.

While transformation of barrier islands is a natural process, the sustainability of a barrier island can be significantly influenced by human activity. Marine influences, particularly those associated with tropical storm events, gradually erode and rework the structure of the barrier islands. Longshore transport of sand and sediment deposits often offset losses from recurring storm and repeated wave action. However, human activities (such as: construction of navigation channels, oil and gas industry pipelines, breakwaters and jetties; and vehicular access to the beach) can significantly reduce or eliminate the ablity for these natural processes to rebuild the barrier islands.

1.5 Project Delivery Team

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Richard Radford	USACE-MVN	Aesthetics	504-862-1927
Norwyn Johnson	LDNR	Environmental/Economics	
Wes Leblanc	LDNR	Coastal Planning	225-342-4117
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Helen Hoffpauir	LDNR	Real Estate	
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Linda Mathies	USACE-MVN	Operations	504-862-2318

2.0 QUALITY CONTROL AND REVIEW

This quality plan was developed to insure that high quality products are produced within the New Orleans District. This plan establishes the policies, procedures, and organizational responsibilities for providing quality control of planning products for this project.

The quality control plan (QCP) for the Barataria Basin Barrier Shoreline Ecosystem Restoration Feasibility Study provides a technical review mechanism insuring that quality products are developed during the course of the study by the New Orleans District (NOD). The technical review of the feasibility study will consist of In House Review and Independent Technical Review. An additional level of policy review for the Barataria Basin Barrier Shoreline Ecosystem Restoration Feasibility Study will be performed at the Headquarters of the United States Army Corps of Engineers (HQUSACE) and will insure that all applicable statutes have been applied with respect to cost sharing, project purpose, and budget criteria. All processes, quality control, quality assurance, and policy review, will complement each other producing a seamless review process that identifies and resolves technical and policy issues during the course of the study.

The review process will insure that a cost-effective solution, that meets the sponsor's requirements, is developed. Technical review will assure accountability for the technical quality of the product. Each technical review objective in the QCP will be satisfied through a seamless review process performed inside the MVN (In House Review), outside the MVN (Internal Technical Review), MVD (quality assurance of technical products), and HQUSACE (policy review). The quality control plan is based upon applicable guidance from higher authority including the Engineering Circular 1105-2-408 titled: Peer Review of Decision Documents dated May 31, 2005, Report of the Task Force on Technical Review, dated December 1994, and CELMV-ET memorandum of 23 September 1995, subject: Lower Mississippi Valley Division, Directorate of Engineering and Technical Services, Quality Control and Quality Assurance Guidance.

2.1 In House Review (IHR)

IHR will be performed inside the New Orleans District